Ecography

**E5385**

Jung, F., Böhning-Gaese, K. and Prinzing, A. 2008. Life history variation across a riverine landscape: intermediate levels of disturbance favor sexual reproduction in the ant-dispersed herb *Ranunculus ficaria*. – Ecography 31: 776–786.

## Supplementary material

Here we report a parallel study within the Sandlache-part of the study area (3.6–6.2 m above lowermost tide level; see also Prinzing et al. 2007). All sampling points were located along small-scale elevation transects that we established at randomly chosen locations within the forest (see Methods section for more detail). In the statistical analyses transects were treated as blocks to account for spatial non-independence and spatial autocorrelation of environmental conditions (Legendre et al. 2004).

## Plant abundance

For plant abundance, 93 sampling points (distributed along 30 transects) were sampled. Abundance of herbaceous plant species was recorded by counting above-surface "individuals", i.e. ramets, that made contact with a two-metre line in the centre of the plot. Ramets mostly represented independent individuals. Two definitions of "contact" were applied: contact with the plant axis, and any contact. Both led to the same results in further analyses, and hence only the latter is presented which better accounts for the cover-abundance of the plants (Mueller-Dombois and Ellenberg 1974). We found a significant decline of ln(x+1)-transformed plant abundance towards lower, more inundation-disturbed locations ($n = 93$, partial $R_{elevation} = 0.6$, $p = 0.001$; $R^2 = 0.62$; Fig. S1).

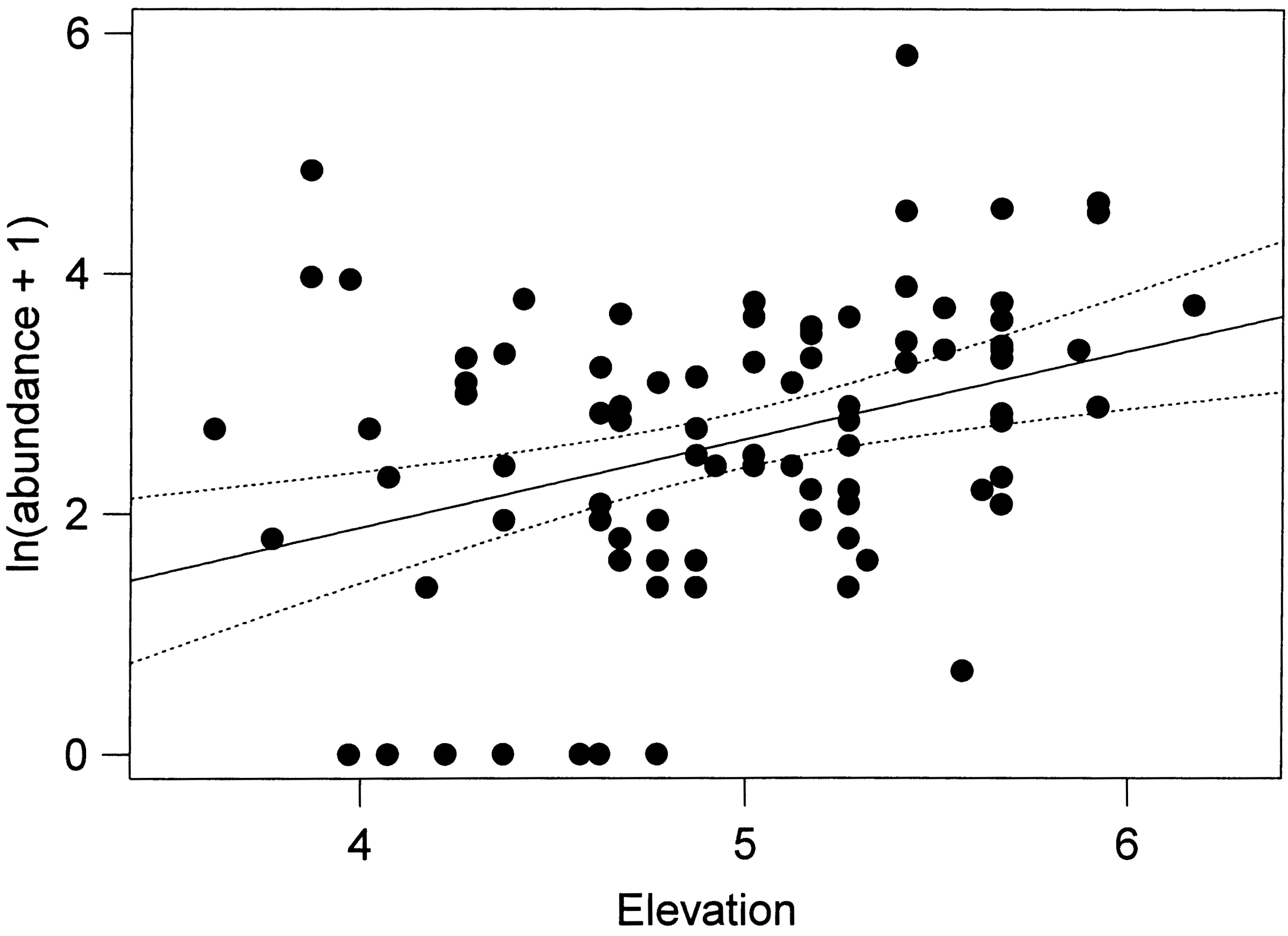


Fig. S1. Relationship between abundance of herbaceous plants and elevation in meters above lowermost tide level, i.e., decreasing disturbance by inundation disturbances. See text for statistical analysis. Note that much of the scatter reflects differences between transects.

## Seed dispersal

To monitor seed dispersal by ants we sampled 26 transects, 21 of which before July, hence in the major seed shedding periods of *R. f. bulbifer* (n = 67 sampling points). We installed a seed tray at each position along the small scale transects. Trays were put under fine-wire mesh (mesh size 4 × 4 mm) only passable for small, slender arthropods like ants. The roof of the mesh was impermeable to rain. A tray was a small, flat dish (diameter 25 mm) with 10 seeds placed in the centre which was slightly deeper than the margins. We used seeds of *Chelidonium majus*. The seeds of *C. majus* are of average attractiveness to ants compared to a range of other ant-dispersed, elaiosomes-bearing forest herbs (Peters et al. 2003), and ants in our study readily accepted *C. majus* seeds. *Chelidonium majus* was not found in our forest and so there was no risk of a bias due to ants developing a search image for this plant where it is abundant and not so where it is rare. We found a significant decline in the number of seeds dispersed towards lower, more disturbed conditions (n = 67, partial $R_{elevation}$ = 0.34, p = 0.02; $R^2$ = 0.41; including July into the analysis further increases the strength of the effect).

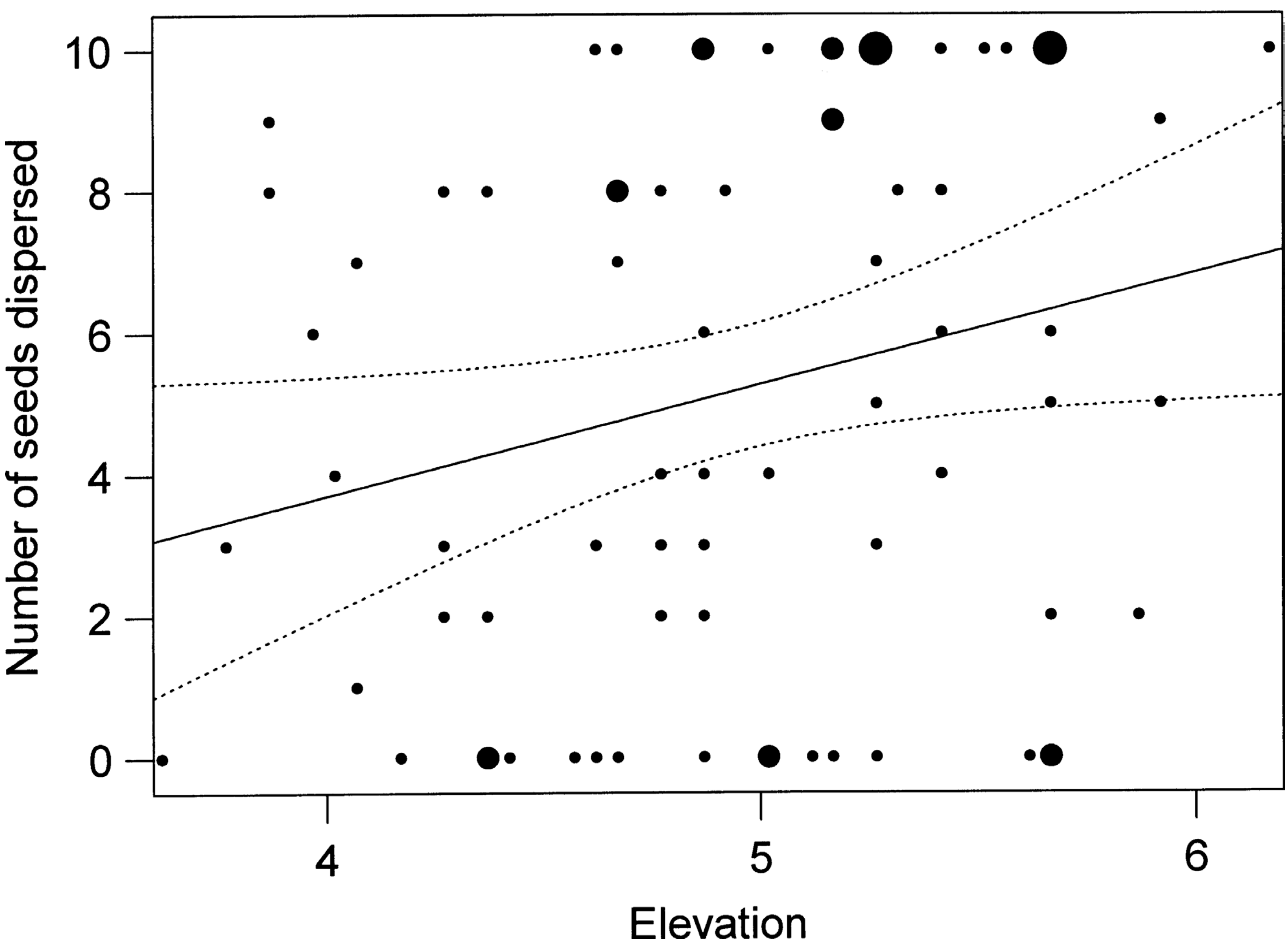


Fig. S2. Relationship between number of seeds dispersed by ants and the elevation in meters above lowermost tide level, i.e. decreasing disturbance by inundation disturbances. Point size increases with the number of overlying points. See text for statistical analysis. Note that much of the scatter reflects differences between transects.

## References

Legendre, P. et al. 2004. Effects of spatial structures on the results of field experiments. – Ecology 85: 3202–3214.

Mueller-Dombois, D. and Ellenberg, H. 1974. Aims and methods of vegetation ecology. – Wiley.

Peters, M. et al. 2003. Seed dispersal by ants: are seed preferences influenced by foraging strategies or historical constraints? – Flora 198: 413–420.

Prinzing, A. et al. 2007. Perturbed partners: opposite responses of plant and animal mutualist guilds to inundation disturbances. – Oikos 116: 1299–1310.